

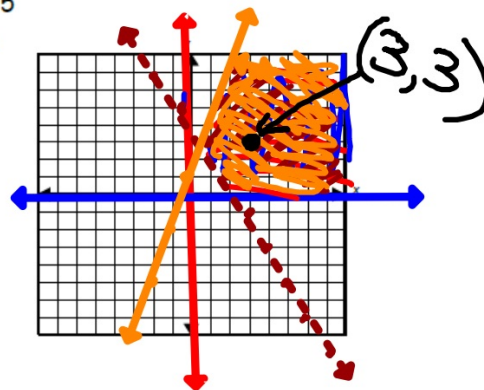
☺ A **system of linear inequalities** is a collection of linear inequalities in the same variables.

☺ The solution is an ordered pair that satisfies each of the inequalities in the system.

Example 1: Graph the system.

$$\begin{cases} x \geq 0 \\ y \geq 0 \\ y > -2x + 5 \\ y \leq 3x + 1 \end{cases}$$

$$\begin{aligned} \checkmark 3 &\geq 0 \\ \checkmark 3 &\geq 0 \\ \checkmark 3 &> -2(3) + 5 \\ 3 &> -1 \\ \checkmark 3 &\leq 3(3) + 1 \\ 3 &\leq 11 \end{aligned}$$

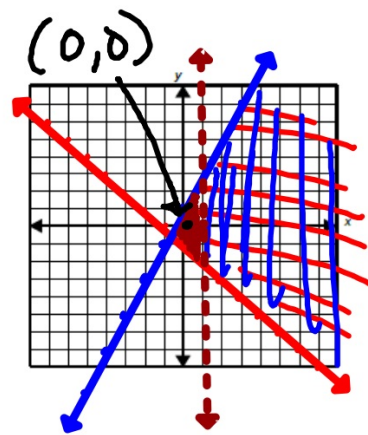


$$1) \begin{cases} y \geq -x - 1 \\ y \leq 2x + 1 \\ x < 1 \end{cases}$$

$$\begin{array}{l} \checkmark 0 \geq 0 - 1 \\ 0 \geq -1 \end{array}$$

$$\begin{array}{l} \checkmark 0 \leq 2(0) + 1 \\ 0 \leq 1 \end{array}$$

$$\checkmark 0 < 1$$



$$2) \begin{cases} y > -x - 2 \\ y > x + 3 \\ y \leq 3 \end{cases}$$

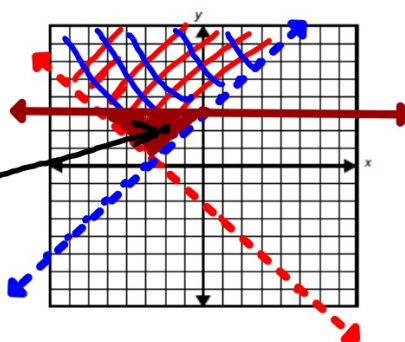
$$\checkmark \quad \begin{array}{l} 2 > -(-2) - 2 \\ 2 > 0 \end{array}$$

$$\checkmark \quad 2 > -2 + 3$$

$$\checkmark \quad 2 > 1$$

$$\checkmark \quad 2 \leq 3$$

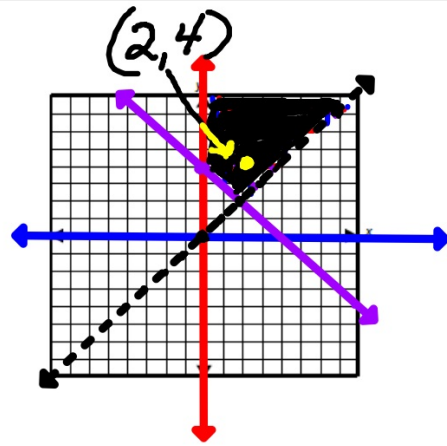
$(-2, 2)$



$$3) \begin{cases} x \geq 0 \\ y \geq 0 \\ y \geq -x + 4 \\ y > x \end{cases}$$

$$4 \geq -2 + 4$$

$$\checkmark 4 \geq 2$$



$$4) \begin{cases} y \geq x \\ y \geq -x + 1 \\ y < 2 \end{cases}$$

